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ABSTRACT

Both technological developments and the political context in which developments have occurred are considered, based on (1) an international conference organized by the Organisation for Economic Cooperation and Development (OECD) in October 1978; (2) results of studies in different countries in collaboration with German agencies; (3) research in the fields of teacher education and new media use; and (4) conclusions of the 1976 OECD Conference in Philadelphia. The first section covers background to the development of in-service education and training of teachers (INSET) and the use of new materials, focusing on political aspects, technological development, changes in INSET, and criteria for the utilization and evaluation of new media in INSET. The utilization of new materials for INSET in selected OECD member countries is then discussed, including projects in the Federal Republic of Germany, the United States, Great Britain, France, Sweden, Denmark, and the Netherlands. Specific topics examined include INSET as a part of multimedia adult education, multimedia productions for INSET, restricted media presentations, single small-scale aids and information systems, small-scale training systems and media, international exchange and production, and information exchange and evaluation. (LMM)

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IN-SERVICE EDUCATION AND TRAINING OF TEACHERS: TOWARDS NEW POLICIES

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The Utilisation of New Materials

Synthesis Report

by

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The views expressed are those of the authors and do not commit either the Organisation or the National authorities concerned

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
1980

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Introduction

This paper has been completed from several different sources. These include an international conference on the use of new media organised by OECD in Munich (11th-13th October, 1978), in collaboration with German agencies, the results of work done by the three authors in a number of different Länder and of their research over some years in the fields of teacher education and the use of new media, and finally the conclusions of the OECD Conference in Philadelphia in 1976. Inherent in our methodological approach has been a study of the literature, interviews in several countries, and discussion of the hypotheses and the material presented in this paper with a wide circle of colleagues.

The paper is in three parts:

I. Background to the development of In-Service Education and Training of Teachers (INSET) and new materials;

II. The utilisation of new materials for INSET in selected OECD Member countries;

III. Conclusions.

This structure takes into account both the political context in which developments have taken place and the technological developments themselves, the two being drawn into a dialectical process of consideration so that appropriate and reasonable proportions and conclusions may be arrived at. It is important that experiences in this field should be seen against the background of real developments and real possibilities within OECD Member countries.

I. The Background to the Use of New Materials and to the Development of INSET

(a) Political Aspects

Apart from the "fascination aspect" of new media in general, the importance of which should not be underestimated in providing a stimulus for their adoption, it is possible to identify two major pressures for the development of their use in education in general and more narrowly in the field of INSET.

The first of these is a relatively idealistic commitment, arising from the theme of the emancipation of the individual by the improvement of that individual and of the educational system in general: a theme which has achieved ever-increasing momentum since it emerged at the end of the Second World War. Examples of these developments are to be found in the Open University in the United Kingdom and in comparable, if more restricted, activities elsewhere; the increase in the availability of TV- and Radio-College Programmes, and further quantitative and

qualitative developments in adult education, offering "second chance" opportunities in a new way. In this context must also be seen more recent attempts to include, within the formal provision of education, groups who have previously been excluded or had inadequate opportunities to participate in and to extend their formal education experience. Instances of this are steps towards the integration of handicapped pupils into the main stream of the educational system as well as the opening-up of opportunities for those who are handicapped by no other factor than the structure of the educational system. This movement has sought to end the exclusion of the majority of a population from opportunities afforded by what have been seen as highly selective educational systems.

The second dominant pressure behind the development both of INSET and of new media within the educational system has been the increasing need over the past decade to make maximal use of whatever resources have been available at a time of increased competition between education and other spending sectors. In this process, it has seemed ever more important to be able to offer a more efficient approach to the use of new media and to learning in general in order to avoid diminishing returns within the field of education, and therefore a serious fall in national educational capital. Briefly, the new media were increasingly needed to bring the greatest volume of necessary new information to the greatest mass of people within the shortest possible time - and if this applies in society in general, it applies in particular to those who work within the major fields of the transmission of knowledge.

(b) Technological Development

The mass production of new media which has grown up over the last 25 years to satisfy the largest possible audience, includes notably the manufacture of video-taperecorders and other means to enable a larger number of people to use television and radio in a more sophisticated manner. This has led, in turn, to higher expectations of the use of such media by teachers within the educational system and, in some cases, to exaggerated expectations in political circles as to the effectiveness. Behind this has been the hope of conserving scarce finance through reduced personnel costs as a result of using the new media, or by capitalising on the use of already existing capacity, facilities, materials, equipment and expertise. The development has been haphazard and headlong and this has often led to unnecessary competition between the providers of hardware and to an inadequate standardization and compatibility of the equipment and materials produced, not least within the field of video-tapes and video-taperecorders. In a process of disorganised market-seeking, the educational system has often been prey to the profit motive and preferences of private industry, and this has led to an intensive and expensive period of purchase within the same

educational systems of mutually incompatible materials and equipment. That this phenomenon obtained especially in the fields of video-taperecorders and supplementary materials, was clearly shown in the proceedings of the Conference on "The Standardization of AV-Equipment" in Belgrade in October 1979.

The overlapping development of video-systems as open-reel, cassette and disc and the disharmony of equipment within the same category has led, and will continue to lead until an appropriate standardization is achieved, to the need for considerable extra resource provision. Indicative of a possible exit from this vicious circle is the progress that has been made in the specialisation of the use of particular kinds of media for particular activities, some examples of which we shall give later.

(c) Changes in INSET

The two pressures previously referred to, greater human emancipation by the spreading of knowledge through new media and the improvement and greater efficiency in the transmission of knowledge by the use of those same media, can be traced through and tested for their impact on the field of INSET. In all OECD Member countries there has been a rapid acceleration in the provision of courses of different kinds, lengths, quality and professional context in an attempt to up-grade and up-date teachers, to improve their efficiency and to provide teachers for newly emerged priority spheres within the educational system. Examples of this can be found in the fields of modern-language teaching, science, mathematics, the establishment of courses to cover areas such as child-care and linkages between home and school, as well as concomitant measures needed to accommodate the inclusion within the educational system of handicapped children and of members of ethnic and social minority groups. This process has occurred in different ways in the different Member States but, as a generalisation, it has happened at all levels from school-based through local, regional up to national and in some cases international levels.

Parallel to this development has been the growth of appropriate qualifications, and a considerable extension of ways of achieving them, together with the expansion of opportunities for releasing teachers to participate in INSET. Similarly and related to this, there has been a rising tendency to focus activities on the teacher's own work and needs, to pay greater attention to the teacher's own assessment of his work and needs, and institutionally to facilitate and financially support teacher-initiated and controlled INSET. But the establishment of these networks has often occured in an haphazard, inchoate and unrecognised manner, in the sense of such activities being unable to contribute in any way to the achievement of a further qualification. Added to this is the further problem that in many countries a commitment to in-service education, and through

it to self improvement by the teacher, has not been institutionalised in the form of contractual obligation. Furthermore the inadequate control of such a commitment, where it is legally required, and the way in which it fits in with the needs of the individual schools, is an area of investigation and evaluation as yet relatively untouched.

In some countries, of course, the situation is worsened by the fact that the major burden of supporting INSET financially and professionally, falls on the shoulders of the teachers. Above all, in the disparity between the funding and institutional provision on the one hand, and the idealistic, political pronouncements made available for INSET on the other, there is a strong indication of a continuing under-recognition of the need and function of INSET in rapidly changing school, educational and broader social systems. This credibility gap must be seen in the context of the extremely high expectations held for the outcomes of curriculum developments and organisational changes which have been introduced into the educational systems of almost all Member States over the past two decades. Thus the major challenge for the educational system in the next decade is likely to be the surmounting of these political, organisational, curricular and evaluatory obstacles and the formulation, in more precise terms, of the professional expectations these improvements represent for teachers. But as further challenges will inevitably arise from developments and reforms in the educational system itself, organisationally, substantively and pedagogically, they will also arise from an increasing and more judicious realisation of the interdependence of initial teacher education and INSET.

Examples of more recent curriculum development can be seen in many Member countries in the fields of relatively well-established subject areas such as foreign languages, new mathematics, integrated science, social studies, and in the introduction of new subjects, such as psychology and economics, together with the development of new pedagogical approaches, including family grouping, the integrated day, open-plan working, project work, individualised instruction, the use of the community as a learning resource and conversely the involvement of the community in the learning of the school. New working techniques, such as team-teaching and micro-teaching must also be seen within the context of macro-structural changes which have taken place as a consequence of the commitment to comprehensive education and the spreading of educational opportunity.

It is apparent that there is a differential level of qualification capital in different teacher corps at different levels. The reasons for this are manifold, but amongst them may be cited the increasingly rapid rate of the obsolescence of knowledge, the changing age-structure of the teaching profession and the different structures of initial training, even within the same country. Most teachers at the secondary stage still

lag in their knowledge of educational and pedagogical theories and strategies which would assist them in accommodating to these changes, and, at the primary level, there are increasing demands for a higher level of specialised knowledge, such as in the fields of languages and mathematics. Such challenges await an adequate response in the INSET structure and offerings available to teachers and in the opportunities to take advantage of structures and offerings already available.

Whilst the naive political expectation of an easy and cheap solution to these problems and challenges through the implementation of new media in INSET is almost certainly misplaced, equally mistaken would be an inadequate representation of such new media in responses which were formulated to those challenges. The generalisation, sometimes of already demonstrated potential, would enable new media to be used in order to provide teachers with at least some of the new areas of knowledge, the tools and the expertise to enable them to meet the new challenges with greater confidence.

(d) Criteria for the Utilisation and Evaluation of New Media in INSET

The field of evaluation as a whole is a relatively new area of study, but it has already given rise to a wide range of literature, indicating possible areas of more extensive assistance in the implementation of new media in INSET. While it is beyond the scope of this brief paper to propose a complete list of criteria for the utilisation and evaluation of new media in INSET, and while basic work within the field of definitions fundamental to the use of media within INSET has still not been done, nonetheless the time is ripe for the recognition of a more categorical definition of the way in which different kinds of media may be used in various kinds of INSET provision.

It may be reasonably assumed that INSET is school-oriented in the broadest sense of that concept. But how this orientation may be made actual in the work of individual teachers and individual educational institutions remains as yet unresolved at a systematic level. Some media will lend themselves more easily to the transmission of necessary information and content, others may be appropriate for the development of attitudes and awarenesses and yet others may be best implemented in order to develop a combination of cognitive, affective and psycho-motor competencies, which may find their fruition in improved educational praxis.

For such a complex system as the definition of INSET represents, with a major function in the transmission of knowledge in society, the sustaining of teacher competence to achieve this transmission and to extend and improve the educational capital of society, it is difficult to find all-inclusive criteria as to

effectiveness. This does not have to mean an end to attempts to generate appropriate criteria for the introduction, implementation, utilisation and evaluation of new media in INSET, but rather that any further increase in efficiency is likely to rest upon this prior theoretical development. Such criteria should in any case be related to:

- the long-term and short-term effects of the implementation of given media;
- the cognitive, non-cognitive and action dimensions of the competency of the teacher;
- the circumscription of the use of media and the packages through state organs;
- length and intensity of training needed for effectiveness in comparison with alternative methods;
- the extent of development necessary in teacher educator competence;
- the situational context and the ease of implementation of the media and materials concerned;
- the distances involved and the extent of facilitation needed for interactive methods of work;
- the total financial cost of the implementation, including necessary buildings, equipment, materials, staff time, expertise and travel, and, as appropriate, air-time for transmission and necessary teacher educator release.

The complexity of such a topic and the provisional criteria listed above, only make it all the more necessary that a holistic and realistic assessment of the financial implications of the implementation of new media and materials should be attempted. To put this point in context, it might be useful to compare the costs of transmitting Open University programmes in Great Britain with those charged on a commercial basis, say for the transmission of advertisements. Such considerations are at the root of the practicality of the systems of which examples are considered in the following section.

II. The Utilisation of New Materials for INSET in Selected OECD Member States

In view of the complexity and proliferation of aids and materials that have become available in OECD Member countries in recent years, an attempt is made in this section to provide a loose grouping which will enable some kind of over-view and appraisal to be given. In each case we consider the various aids with respect to:

- their contribution to the on-going qualification of teachers;
- their
- their relationship to identified teacher needs;
- the length and investment of time demands on teachers participating;
- the expressed function of the media and materials;
- the location or locations of their provision;
- the funding and other support for the provision; and,
- any indications of the efficiency and efficacy of the use of the given media or materials the improvement of teaching and learning systems.

In this section a distinction is made between those multi-media productions and provisions that are specifically aimed at the teaching profession or parts of it and material intended as part of a wider provision of adult education but which may be also found to be of use and value to teachers.

(a) INSET as a Part of Multi-Media Adult Education

In the Federal Republic of Germany from the end of the 1960s a radio-college, sometimes also combined with television, was available over a number of different subject areas, including biology, music, education and psychology. According to researches and evaluations of these programmes, a large proportion of participants came from the ranks of the teaching profession. Within this Funkkolleg participants could acquire certificates which could be accumulated towards further qualifications. The high level of participation of teachers in the provisions of the Funkkolleg, in some cases as high as 40 per cent to 45 per cent, can be traced perhaps to the extremely high quality of the presentation and the high academic level of the packages as a whole. Sometimes, however, this was a source of criticism of the material offered, in so far as the level of knowledge pre-supposed on entry to the courses was said to be so high that only those who were already specialists in these areas could possibly survive. The transmissions of the Funkkolleg were accompanied by printed material which was of a very high standard and they often included provision for a social phase in which face-to-face contact between students and staff and students and students was facilitated. This also included seminars and discussion groups within the adult-education system. The printed material was used extensively in both initial and in-service training of teachers. An interesting international dimension is provided by this example in the way that transmissions were received and printed material was used in Austria and Switzerland as well as in Germany. Indeed, both of these countries transmitted or retransmitted the Funkkolleg broadcasts.

The experiment best known internationally in this field is the Open University in the United Kingdom which, from the early 1970s onwards, offered many tens of thousands of participants an opportunity to obtain a higher education experience and qualification, without necessarily having the usual entry qualifications or to study full-time. There is little doubt, and indeed this was source of some criticism, that from the beginning large numbers of teachers had registered for participation in these courses while more recent provision by other institutions of part-time degree courses specifically tailored to teachers' needs did not seem to have stopped this tendency. Once again, in this case, high quality printed material and other small aids were made available, such as specially designed microscopes for the scientific work. The packages involved regular social phases, including face-to-face contact and an extensive counselling system supported, as appropriate, by summer-schools. It is apparent that these general materials developed by the Open University have been extensively used by students in other parts of the higher and further education systems as well as by the general public outside. Moreover, they have been exported to a number of foreign countries. While there are no specific records of the "informal" use of such materials in INSET, there can be little doubt that they have been extensively used, often in the context of formal courses even at Masters Degree level or, alternatively, for work within colleges or teachers centres as part of specific degree courses for teachers, such as the burgeoning number of B.Ed./B.Ed. (Hons.) Courses.

In the United States, in France, and elsewhere, a number of examples can be given of more generally available adult education programmes which have no doubt been of use to teachers. The television-based University of Mid America (U.M.A.), which has six constituent universities and was established in 1974, represents a unique compromise between centralisation and pluralism. Further instances are the Contract University of Minnesota, the so-called University without walls (U.W.W.), and the Empire State College, where the students act in initiating their own learning and where qualified people from the wider community are used as adjunct tutors in multi-experiential learning packages with individualised assessment and flexible timing. In these cases, it should be mentioned that a large minority of persons from previously untapped sources of recruitment into higher education have been found to participate, for example women, those with small incomes, and those with full-time jobs. The New York Regents External Degree scheme at the University of the State of New York also provides an educational brokering system. The Free universities and the courses by newspaper first tested in 1973 and initiated in 1975, where credits are available for learning through experience and through courses which have not been taught by academic institutions, are further instances. Similar developments can be cited from Canada at the University of Athabasca in Alberta and at the extremely successful University of Quebec, again dating from the late 60s-early 70s.

In Scandinavia, more recent indications are of a turning away from nationally based multi-media-systems, such as the Open University in the United Kingdom. There is nonetheless substantial experience in the use of both radio and television with multi-media-packages as part of the provision of adult education, or more narrowly as part of the provision of opportunities for retraining particular social groups. In both Sweden and Denmark, there is a special department in the state radio which has responsibility for this kind of output.

(b) Multi-Media Productions for INSET

Perhaps the most substantial, recently introduced course in this area is the Diploma in Reading at the Open University. This course was offered from mid-1978 for commencement in February 1979, for which purposes it was combined with three other specially prepared courses in language development: the reading curriculum, the advisory role, and reading and individual development. There was an almost immediate response from teachers in excess of 15,000 enrolments, and the Course is likely to open the way for other substantial developments of a similar kind. As usual with Open University courses, it includes high quality printed material and social phases.

In the Federal Republic of Germany, several experimental projects have been carried out since 1972 in the documentation of teaching, teaching of various subjects, training teachers for practical skill training, pre-school education in foreign countries, and, the provision of a Pedagogical Magazine comprising video-cassettes and printed material. For these experimental programmes, some 300 AV-productions were made and comprehensive written material prepared. The Magazine, for example, is intended to acquaint all kinds of teachers with essential areas of knowledge in educational theory and practice, such as variations in levels of intelligence, information concerning disturbed pupils, curricular planning and curricular based activities. These productions will continue in the next few years and will cover such areas of work as the education of handicapped and ethnic minority children and special problems in vocational education and training. They may provide further information concerning other educational systems as well. Sometimes developments have arisen from curricular reform within the wider educational system. Such is the case in the introduction of new mathematics and Junior English Teaching (JET) in the Swedish Comprehensive School. A mathematics project, called Delta, resulted in the provision of some 36 radio and 20 television programmes which were then transmitted, accompanied by written material as a series of lectures and seminars in which individual teachers could participate. A cost analysis has been made of the Delta Project, and it was found that its comparative cost, presented on a multi-media basis as against the cost would have resulted in traditional presentations, was in the ratio of S.Kr.2,000 for the latter and S.Kr.100 for the former. The

projects and assignments of the teachers were evaluated and marked by an academic institution which undertook the work of processing the answers. The financial evaluation, referred to above, has to take into account that, since the early 1950s in the case of school material, and, since the early 1960s in the case of school television, extensive developments have continued to take place in Sweden. A guarantee that the radio and television programmes were available to the learning groups when they were needed lay in the fact that the number of times the transmissions were made per week could be revised on the basis of local or regional audio-visual centres making copies of the material, and in turn making those available to local or regional learning groups. Today, some 97 per cent to 98 per cent of school radio programmes are taperecorded in this way and are mostly received by the schools in the form of tapes or cassettes rather than live transmissions.

Another example of a multi-media programme in Sweden is the establishment of early English from Class 3 as part of the JET (Junior English Teaching Project). Again this should be seen in the context of the very rapid development of school reforms in Sweden in the 1960s and the early part of the 1970s which made it necessary to bring about relatively quickly the establishment of new areas of subject competence amongst the teaching profession. This may well lead to a situation in the future in which such multi-media projects as JET and Delta will be seen to be inappropriate to the trial programmes and experimental situations of a rather more slowly moving educational reform process.

Today, rather than offering larger instructional units, the media are tending as a rule to offer modules in association with written materials with the aim of activating teachers and pupils into incorporating their social environment and that of the school into their working and learning processes and situations. Media are being used with increasing intensity in teacher in-service work. The reason for this is partly that the old system of INSET, resting predominantly upon the spoken or written word, is becoming untenable and it is more and more taken for granted by the teachers and teacher trainers that media will replace it in classroom teaching or INSET provision. This development in Sweden has been able to draw on the skill and support of some 80 audio-visual centres, most of which are extensively furnished with AV-materials and equipment and are located in more remote areas as well as in the main centres of population. Additionally, schools may record direct transmissions from radio and television and establish a small audio-visual library of their own instead of having to record all of the centrally transmitted provision.

A Swedish law which was passed in 1976 led to the consolidation of the various institutions concerned with educational radio from 1st January, 1978. From this consolidation arose a unit which covers not only pre-school and family education but also adult and teacher education. The main emphases in the productions of the educational radio and television are likely to be:

- the integration of handicapped children into family life and school;
- integration of the children of foreign workers;
- the further education of adults who have only had a short educational experience.

The Danish National Broadcasting Corporation and the Royal Danish School of Educational Studies have produced a number of different teachers courses dealing with such topics as general pedagogical issues, the teaching of Danish and the first years in school, in which the first phase has been used as a touchstone for the co-operation on an experimental basis of two independent institutions. Different media have been used and materials produced and in addition there have been study group phases at school level. Additionally in some cases the services of a consultant adviser have been available. In the early part of this project, an attempt was made to use the three major media, television, radio and booklets, in a more differentiated and specialised way, with television presenting holistic situations which would give an overview and an opportunity for the teacher to see things of which it would be otherwise difficult for him to have experience. The radio transmissions were then used to present supplementary themes in a provocative way, and the booklets were intended to be a kind of text-book back-up, containing articles, bibliographical recommendations, and, in some cases, working materials.

The main characteristics of this innovatory approach to INSET included:

- multiple entry points to the programme;
- action research components;
- teacher involvement in planning;
- access to different learning resources;
- use of feedback-systems;
- evaluation results fed into succeeding projects;
- differentiated roles for different media.

The high expectations surrounding the complex and sophisticated material produced for the first course were not realised. The broad scope seemed to produce bewilderment and indecisiveness. There was thus a serious imbalance in the relationship between material provision and social phase. The evaluation of the first course which revealed these weaknesses resulted in appropriate changes in succeeding courses. The fulcrum of the whole package has to be the study-groups to which the rest of the multi-media package was subservient.

In the Netherlands too, examples of multi-media investment in INSET can be cound. One is the co-operation initiated between the Broadcasting Company of the Netherlands and three universities in a project on the professional upgrading of high school teachers aimed to make a contribution toward their general performance but without directly leading to an improvement in the level of their teaching skills. These restricted terms of reference included the optimised use of particular media. These included written material, some 20 radio broadcasts and six television broadcasts, ranging over such topics as, what is good teaching, educational objectives, curriculum and curriculum development, inequality in education, evaluation, educational research, the adolescent in the school, psychology in learning and general views on education. The television broadcasts were intended to start with concrete class and school situations in order to illustrate a number of important elements in teaching. Once again the hope was that the employment of television and radio combined with good written material would result in lowering of expenses, a better response to the needs of the potential consumers and a greater opportunity for their participation and choice.

Since the early 1960s the Centre National du Télé-Enseignement (the National Center for Teleteaching or C.N.T.E.) in France has offered various groups of teachers distance learning opportunities for training and retraining including courses in modern mathematics. Since 1973, interesting approaches to the integration of art teaching within the primary school curriculum have been introduced, and pedagogical workshops arranged by the radio and television educational broadcasting company have provided pedagogical and didactic updating and upgrading for pre-primary and primary teachers. The broadcasts, both television for two hours and radio for one hour per week, were designed for autonomous use and as a support for school broadcasts. Such broadcasts have been transmitted and recorded for two purposes by two kinds of institutions, namely the Ecoles Normales and the regional and departmental AV-Centres as part of the initial and in-service teacher-training provision. A distinction was made in the broadcasts between material in such subjects as physics, biology and geography (which were largely documentary and where teachers could use the material as educational capital with very

little additional help) and others where more significant teaching situations were designed and made available, with or without commentary, around such aspects as traditional pupil-teacher relationships. Additionally, parts may be used for instruction in the classroom. Both types are available from the National Documentation Center for Education (CNDP).

The pedagogical workwhop associated with the transmission of these broadcasts has an important function in encouraging exchanges between users and producers and in providing an important aspect of professional support for teachers at a critical time in the introduction of new ideas, new materials and new equipment. Evaluations indicate that broadcasts were rarely used for discussion groups and that, in some cases, although quite a high proportion of people watched the series, this was on an individual basis. Significantly, it was found that individuals regarded what had been produced as a model either to imitate or reject, but rarely as a basis for analysis and improvement. The material seemed to have little lasting impact and was thus not much more effective on film than if the material has been part of a lecture in an institution. These conclusions for the work in France have important implications for the evaluation of similar work in other countries, representing as they do problems yet unsolved in the use of large media systems in INSET.

The crucial impulse potential of educational television is demonstrated by French experience of modern mathematics. Long-term social-phase commitments were initiated by a series of television programmes transmitted in the late 1960s. Those launched a nation-wide discussion among teachers of mathematics and resulted in the establishment of special institutes. The Institutes for Research and Education in the field of Mathematics (IREM) are a particularly important development in overcoming didactic and substantive shortfalls in professional competency. Today there are some 25 IREMs which deal with the content of mathematics and also with the didactics and pedagogics of teaching the subject. As the IREMs have developed, contacts have been extended to Educational Research and Documentation Centres and co-operation has been established with the centres for the development of films in their own right and for television. Experiments and research have also been undertaken in collaboration with teachers and psychologists in the IREMs. The primary objective of these institutions, is much the same as for the Teacher's Centres in England namely to support developments within the primary sphere of education. Special attention should be drawn to the initiative shown by teachers in these experiments and its expression in direct transmission by media systems.

From the examples that have been given of large media systems specifically aimed at the provision of INSET, it will be obvious that there are both advantages and disadvantages. The advantages appear to be these:

- a relatively cheap opportunity to reach a large audience;
- the use of already existing facilities and expertise;
- involvement in a "glamourous" medium;
- the opportunity to tie together a number of media and to focus them on a particular task and audience group;
- speed of transmission;
- the opportunity to use material produced for one purpose for other purposes - e.g. material for in-service education of teachers can be implemented on occasions in a classroom situation.

The disadvantages, some of which have been revealed by the examples we have cited, include:

- the tendency to neglect social phases and concentrate, often unsuccessfully, on the transmission of cognitive content;
- the relatively unexplored territory of evaluation;
- over-sophistication and over-estimation of the receiving audience;
- inadequate opportunities for feedback and lack of contact between producer and desired consumer;
- rapid obsolescence of expensively produced material;
- a relative rigidity of "spare-part" substitution;
- a discordance between the aims of media components;
- a danger of insecurity on the part of teachers who compare their own teaching unfavourably with models presented on television etc.;
- an inadequate emphasis on specific local needs and situations.

Thus it is clear that although substantial experience of the use of large media systems, is available, both for general adult education and for adult education specifically focussed on INSET, there has as yet been inadequate evaluation, consolidation and appraisal of packages already delivered. The expenses associated with such large media systems and their implementation in INSET have often been under-estimated by taking for granted certain aspects, such as transmission time and the time and

services of staff employed by other institutions and whose time and payment should therefore be included in the overall estimate of cost effectiveness. Given these reservations, there is little doubt that, in spite of the current financial crises afflicting educational systems in most countries, large media systems could continue to have a cost effective and beneficial effect upon the professional expertise and confidence of the teaching profession.

(c) Restricted Media Presentation

(i) Media Emphasizing Written Presentation

Whilst there are many examples clamouring for quotation in this section, two of the most successful and enterprising experiments in this field are probably the newspaper colleges established in the United States from the early 1970s, and in the Federal Republic of Germany from 1978, under the auspices of the Germany Institute for Distance Studies (DIFF). Neither of these, of course, was designed specifically for INSET.

The aim of the Germany newspaper college is to attempt to offer an opportunity of access to information on at least three different levels to readers who would otherwise not be institutionally involved:

- normal journalistically produced articles, scientifically researched, which newspapers may take up in the context of their general output;

- materials which may be additional and can be purchased (e.g. by teachers) at a favourable price and which accompany the main articles. There is also a handbook with suggestions for the way in which the material from the newspaper and the supplementary and complementary material may be used, both didactically and substantively, together with a bibliography;

- parallel to this written material, institutions of adult education offer accompanying courses either in the form of individual lectures, seminars of different kinds or discussions, films and excursions.

The particular advantage of this medium is the large audience that can be reached through the newspapers, plus a flexible opportunity to use and capitalise on the material at different levels and in different forms. At one level, it may be that the generally interested reader is satisfied with what he finds in the newspaper [illegible]t another, a specialist will be able to pursue the theme further with the help of the supplementary material. A further stage that can be built in is the social phase, organised by the institutions of adult education.

Early indications confirm that many teachers have participated in the two main programmes offered so far on "Landscape and Geology" in 1978 and "Europe" in 1979. Moreover it has been found that the newspaper material is often used as instructional material in classrooms and additional material is used by teachers in the preparation of their work with children. There are also indications that a number of institutions of teacher education and of education in general are using the material. An additional programme on "Children" has now been offered and, while a high rate of participation by teachers is anticipated, it is also to be expected that there will be other participants including educationists and parents.

Examples of restricted media presentations may also be found in other countries. As examples may be quoted the work on INSET for headmasters, carried out in the Bristol area by one commercial television company under the title "Training Heads". This included material of an in-tray out-tray kind. Another programme was provided in the Southampton area by one of the local radio stations under the title "Who Cares?". In the United Kingdom both commercial and BBC local radio stations have been involved in various aspects of in-service training on a small scale basis, some of which have included printed material. Additionally many of them have put out programmes for local ethnic and social minority group communities.

The German Institute for Distance Studies at the University of Tübingen has for a number of years now had extended offerings in the field of so called "study letters". These cover fields such as counselling, molecular biology, English, religion, mathematics, social studies, thermodynamics, and working with handicapped children. The largest role in these offerings is played by written material, but it is not unknown for additional media to be drawn in on a supplementary basis. Of course, as often happens, written material that is included as part of a multi-media presentation is sometimes used in a uni-medium situation. Such is the case according to all reports with much of the material of a written kind which has been produced by the British Open University and the Fünkkolleg in the Federal Republic of Germany.

(ii) The Collection of Basic Material

In Germany the University of Hannover is developing a collection of verbal transcripts of lessons. Although these are being collected for one particular purpose, they are also available for the analysis, interpretation and evaluation of teaching. It is also intended that they should be available for uses other than those for which they were originally created, e.g., as material for problem identification, as a data basis for research projects in the field of instructional research, as working material in sessions concerned with the teaching of

different subjects, and in preparation for school practice. This technique has been developed to a high level of sophistication by many Teachers Centres and new media resource centres which have been established in many of the OECD countries over the past two decades. Reference could be made here, for example, to the role of such institutions as the Centre for Urban Studies in Education in London and similar teachers and resource centres throughout the United Kingdom, and to analogous developments in other countries such as France and Scandinavia.

Additionally, many of the broadcasts which are transmitted by the educational stations for use in schools are also used as resource material in teacher education, and a number of the broadcasting systems, including for example the BBC, produce information and guidance for lecturers and other staff concerned with teacher education, on how to use such broadcasts as resource material. Although there is a substantial use in the initial and in-service training of teachers of clips from lessons that are recorded and transmitted through video-systems, the production and use of pre-prepared clips of such lessons is also increasing. A growing number of media centres offer films and taperecordings of such clips and substantial progress has been recorded in the international transfer and adaptation of micro-teaching materials.

Advances have also taken place in providing a systematic combination of materials that demonstrate particular instructional sequences or didactic steps on film or video-tape. An example of this is the comparison of different styles of teaching and methods, including the way in which initiatives taken by pupils are built on by teachers, and the problem of the conclusion of a particular lesson or instructional sequence. This process is approached in different ways, ranging from attempts to produce a fairly objective picture of the sequence of events in a lesson to an attempt to concentrate on one aspect of what is happening in that classroom through the eyes of one camera. In some, commentaries are provided which either didactically or generally offer an accompaniment to the sequence of events. In other cases, it is left to the individual teacher educator to produce and provide his own collection of such materials at national, regional, local, and institutional levels. This is now widespread, as is the production of catalogues detailing such collections. For the most part, however, the level of mutual availability of both media and catalogues is low, and therefore exchange usage is inhibited and restricted nationally, let along internationally. Moreover, where such exchanges have taken place there has been a tendency for this process to be either politicised or commercialised on a supplier/receiver basis which has tended to fail to take account of the circumambient and unique cultural and social settings involved. Whilst not undervaluing worthy initiatives already taken, the need is now for a closer definition of what such exchanges mean for all parties in the context of real and effective educational co-operation.

(d) Single Small-Scale Aids and Information Systems

In all OECD Member countries there has been an impressive development, both of the pedagogical use of small aids and in the extent of their use in different kinds of schools and educational institutions. Such aid as overhead-projectors, slide-projectors, film-projectors, taperecorders, calculators, etc., introduced on a wider scale as recently as the early 1970s, are now commonplace in the schools, either as alternatives to blackboard presentation or for use with pre-prepared slides. They have proved their worth and established themselves on a par with other aids in classrooms and lecture halls.

This generalisation, however, should not be taken to mean that there is no further scope for development of efficiency and proficiency in the use of these aids. This is far from being the case, and, indeed, almost everywhere comment has been made and evidence has been forthcoming of the inadequate state of initial preparation of would-be teachers in the use of such aids. Examples are legion of language laboratories and single technological aids lying idle and collecting dust because of the inability of teachers to use them or to use them efficiently as part of their normal teaching programmes. The number of teachers who can use a 16mm-projector unaided, for example, is still probably in the minority in a lot of countries. Furthermore, where the expertise is available, the physical conditions are often unfavourable. There would thus seem to be a considerable disparity between the amount of capital and recurrent expenditure which has been invested in such aids and the development of networks and systems to facilitate their usage, or their actual utilisation in single classroom situations.

In a number of cases work has also progressed swiftly in the compilation and dissemination of information about aids and materials. The Institute for Film and Pictorial Presentation in Science and Instruction (F.W.U.) in Munich has instituted a central data-bank for audio-visual media in the Federal Republic of Germany. All available educationally relevant audio-visual aids are to be stored within this data-bank which will be available to several different user-groups, including those who are planning the development of media, producers, loan-companies and, of course, the consumers as well. All available media will be cross-catalogued under a number of different headings, and it is hoped to include all media available through publicly supported institutions by the end of 1980.

The advantages of the media described are, in many cases, those concerned with extensive development and implementation periods and in others with the use of old, well trusted and well known media in new contexts and in new ways. There are lessons to be learned from the flexible and adaptable thinking which has surrounded alternative uses of many of the media referred to in this section and they may also be drawn for media described in other parts of this report. One thing is certain, and that is that the "fright" factor seems to be reduced by dint of "old friends" being used in new ways.

One of the most indicative developments in Member countries in recent decades has been the establishment of organic networks of local, regional and national centres where aids are available for practice or are stored or in some cases are actually produced. The English Teachers Centres have made a major contribution to such developments, but reference should also be made to the Regional Documentation Centres in France and, with regard to specific subject areas, the IREM in France and similar networks in Scandinavia and elsewhere. A lot of INSET activities in different countries, especially where INSET is combined with curriculum development or revision, enable teachers to produce or participate in the production of small-scale media. While it is true to say that large numbers of teachers are now making their own software for use with many of the aids referred to, it is also still the case that inadequate time allowance is given to teachers to be able to do this, and this may be one reason why the majority of teachers are still not involved in this kind of activity.

In this context special reference should be made to the Colleges of Education Learning Programmes Project (CELPP) in the United Kingdom which was organised by the Council for Educational Technology (CET) from 1972-1976. The main task of the project was to facilitate a more effective use of media in the Teachers Colleges and, through the establishment of an overall catalogue, to enable the exchange of already existing materials to be effective between different institutions. Evaluation of the exchange element hardly took place at all and newly produced materials were seldom implemented. However, the production of the catalogue itself led to unexpected outcomes, namely a greater interest on the part of tutors in producing their own materials and preparation of materials by tutors which would have a more widespread use. As a side comment to this project, the results clearly endorse the importance of the provision of information.

(e) Small-Scale Training Systems and Media

Another activity originating from the CET is the Dolminset Project. This was designed to test out whether, through better co-ordination of existing resources, a Local Education Authority can produce INSET materials cheaply which can in turn be used by a teacher or a small group of teachers on their own initiative. Four phases were distinguished: identification, design and production of materials, evaluation, and development. The project was evaluated from 1978.

Over the last decade the use of micro-teaching techniques has grown considerably both in initial and INSET courses. One of the main tasks of the Ecole Normale de Saint-Cloud (Paris), for example, has been the development of micro-teaching units with the help of AV-aids (videoscopie).

In the framework of INSET there is now a trend towards teachers having an increasingly important and productive role in the design and production of new media and materials. Here two directions of development can be identified; the one in connection with INSET, and the other in connection with materials and equipment that have a direct pedagogical or didactic application in the classroom. In the pursuit of even greater professional competence on the part of the teacher, initiatives are increasingly being taken by teachers and teacher trainers to describe, document, analyse and critically evaluate their own performance in teaching. The opportunity thus arises for tapes and video-tapes that have been used in this process being used again in a restricted way by teachers and so maintain an atmosphere of confidence and intimacy.

The development of new materials on a small scale enables teachers to be associated from the very beginning with the pedagogical and didactic necessities entailed. This in turn means they have a greater influence on the form, content and style of implementation of the material or equipment than is usually the case with commercial productions. One example of this is the science teaching trolley produced in the Teachers Centre in Southampton for the implementation of new methods of science teaching in the newly established middle schools in the early 1970s.

Once again it has to be said that further steps in information collection and dissemination are necessary in the matter of parallel pedagogical initiatives at all levels.

(f) International Exchange and Production

As a preface to the more specific comments in this section, reference should first of all be made to the work of the Association for Programme Learning and Educational Technology (APLET) which was founded in 1962. The main objective of this organisation is to facilitate communication between all those who work and are interested in the technology of education, regardless of the level or the institution or the nation within which they work. An annual conference is organised by APLET and its proceedings are published under the title "Aspects of Educational Technology". The Association has specific and special relationships with a national network of centres for programmed teaching and co-operates with the British Council and UNESCO. Whilst the Organisation is concerned with a much wider field than just teacher education, let along ENSET, it has already established itself as an important element in the on-going national, and now also international, dialogue concerned with new media in INSET.

As possible "mini-models" of wider international exchange, reference should also be made to the educational consortia which have been established in parts of England. In spite of inadequate legal or administrative provisions, an extensive exchange of video-tapes and cassettes has been built up on a cost free basis apart from minor postal and other expenses.

Considerable developments have also taken place in the exchange of materials in the French speaking world; but there is a tendency for this process of exchange to be one-sided.

There is long experience in the production and exchange of foreign language materials on an international basis. For example, where foreign language broadcasts and programmes are being prepared in one country there is often an existing network of contacts and support which enables the participation of experts from abroad whether as native-speaking actors or consultants in the production of the programme. Similar but probably not so well developed initiatives have also been taken in scientific programmes. This is especially so in the fields where such materials and programmes can only be produced at considerable expense or on the basis of equipment or expertise that is only available on a restricted basis in certain countries, or may even be unique. The Institute for Scientific Films in Göttingen (FRG) has contributed, perhaps in a unique way, in the preparation of films on ethnology or science. This institution has also undertaken central responsibility for the establishment, compilation and continued up-dating of the "Encyclopedia Cinematographica". This publication contains details of all scientific films used and available by all institutions of different levels both internally within countries and internationally. It is concerned with films as a means of research and not exclusively with their application to INSET.

A recent attempt to stimulate the development and exchange of materials in INSET was the international seminar on the "Improvement of initial and in-service training of teachers through the use of media and the possibilities for international exchange" held in Munich in October 1978. Some 50 participants from 10 countries took part and the proceedings included details of the state of the use of media in teacher education and INSET. There was general acceptance of the need for and importance of media in the intensification and improvement of teacher education. The problem of "overshoot" in estimations of the effectiveness and value of media was also referred to.

The value of a number of aspects of the work with media in INSET was asserted by various speakers. Some, for example, put particular emphasis on the idea of a teacher-oriented INSET organisation in which the teachers could be stimulated to develop their work with media on a school-based level. Others pointed to the need for a closer association of producers, academics and teachers including teacher educators in the conception and production of new media. Others still felt that there was importance to be attached to centrally organised projects for the production and use of media. All, however, were agreed that the decisive thing was to animate and stimulate the teachers themselves to use, and participate in the development and application of, new media. The foreign presentations that gave an overview of the current situation in their own countries (e.g. France, Great Britain, Denmark, Austria and Switzerland) related to the following main areas of discussion:

- media production and the implementation of media in teacher education institutions in Scotland and the Netherlands;

- radio and television programmes for INSET, offered by large professional institutions such as the Open University, the Independent Broadcasting Authority, the BBC, the Distance University of Hagen.

One major achievement of this seminar was the agreement on the part of Belgium, the Netherlands, Austria and Switzerland to participate in a project entitled "Evaluation Programme on Media Packages in Teacher Education".

The important and decisive step taken by this seminar, albeit on a small and modest scale, in the preparation of an international exchange, specifically in the field of teacher education, should be seen against the background of the work and aspirations of the International Council for Educational Media (ICEM). This Council, through the development of exchanges, the préparation of a catalogue and the stimulation of international co-operation has attempted to provide a means and an opportunity to foster international exchange and improvement in the utilisation of educational media.

(g) Information Exchange and Evaluation

International exchange thus far has been limited to a relatively small number of experts who have usually come either from the big national producing institutions or from the formal supervisory organs of the educational systems. International conferences also seem to be frequented by the same limited group. Within this situation the plight of teacher educators is accentuated insofar as it is not only difficult to have an overview of what is available in their own country at different levels, and the conditions under which it may be used or borrowed, but it is almost impossible under present conditions for them to have any concept of similarly useful material available on an international basis. This is especially the case where the technical and technological prerequisites to facilitate an international exchange of use to teacher educators and others involved in INSET are not already available in the form of information retrieval systems. Such a system would have to provide information on such items as the title and an abstract of the medium, the length and the kind of medium, the availability, the costs and conditions under which the material can be loaned, and, any supplementary or complementary material available.

Co-operation in the evaluation of INSET has already begun in the context of the German evaluation programme on media packages in teacher education.

The test evaluation programme has the following objectives:

1. The completion of studies on various possibilities for using multi-media productions in teacher training as well as studies on their impact on those concerned, e.g., students, graduates undergoing in-service training, teachers and training staff;

2. The incorporation in the teams producing new curricula for teacher training of those for whom the project was originally started;

3. The elaboration of aids directed towards the optimal use of the production in all sections of teachers training.

Existing experience of evaluation already undertaken by such organisations as the European Broadcasting Union can act as a very useful stimulus and source of information for the development of international evaluations of teacher education and of INSET more specifically. The bases for such evaluation are thus available. What is needed is the political will and financial resource to develop these initiatives further and to focus them more closely on the field of teacher education and INSET.

One of the major difficulties in this process is the inadequate level of theoretical development for the evaluation of INSET even in general terms. In spite of the promising evaluation of probationary year teachers by the University of Bristol Unit and similar, but isolated, examples elsewhere, this theoretical watershed has to be overcome before specific evaluation of the implementation and development of media in INSET can be attempted.

III. Concluding Remarks

With declining budgets and growing disappointment with the effectiveness of some large scale multi-media productions, it is likely that the emphases in the future will swing increasingly towards a smaller scale, often locally based and even institutionally and individually produced, media utilisation. This will necessitate a different kind of network from those that are in general operation at the moment. Additionally, in all countries concerned there is, a growing anxiety that INSET provision should be strongly "school" oriented, and this implies facilities and opportunities that are in accord with the needs of teachers as they see them in their day-to-day work. At present large scale multi-media programmes seem inappropriately tailored to react to regional - let alone local and institutional - needs in this way. It must also be remembered that the number, range and

quantity, and the quality, of media are still increasing at a time when real budgets in almost all member states are decreasing. This again would seem to indicate the need for fostering local small-scale media rather than venturing the massive investment in multi-media complex offerings which would tend to absorb all budget support available in one or a few projects.

In any case, it is apparent that the social phases as part of the kinds of project and media usage described in this paper have been of fundamental importance, even though not always recognised as such. It must be stated quite categorically, that any hope for long-term effects will need to be secured on the basis of on-going social phases in any programmes which are offered.

Of course it would be short-sighted to abandon all multi-media large scale and national media programmes. There will still be a place for these in the future, but there will need to be an increased differentiation of usage of such media (a division of labour) which can take into account the strengths and weaknesses of different subscribing media within a multi-media project and the tasks for which they are best suited. In this context, there would seem to be wider recognition of the need for multi-media projects as a resource provision rather than an attempt to offer a total learning package.

Without in any way wishing to exaggerate the situation, it is apparent from our researches that internationalisation of media exchange and usage cannot continue to rely upon unplanned contact which is restricted very largely to functionaries and their beneficiaries. A major prerequisite to any intensification of international co-operation in this field (and there is little doubt that this is highly desirable) needs to be based on the prior development of networks of contact and association at all levels. Such wider networks of contact and association will inevitably facilitate a further prerequisite of international work in this field, namely the overcoming of the current national and international information deficits. But if they will benefit from this step, they will also contribute to it, because such systems for the exchange of information will need to be speedy, efficient, cheap and above all compatible across national boundaries.

We have suggested in this paper the kind of information that needs to be made available as part of a computer assisted resource utilisation and retrieval system. Such a retrieval system will either have to include or facilitate the parallel development of a feed-back-system of communication, particularly between producers and consumers.

There is already massive experience of the use of different aids and media in different local, national and international contexts. Access to this information is difficult enough; dialogue about it and reaction to it are extremely improbable in the present state of information scarcity. Where large multi-media projects are being conceived, it will be important in future for those who aspire to international usage to include participation at a meaningful level of influence by members of the countries to which the media usage is intended to be adapted.

The development of such intensive co-operation and the provision of more efficient and compatible information exchange and retrieval systems does not in any way need to infringe on the national styles, aspirations and needs of member states. Rather the reverse: provided that there is compatibility, the location of the information is of less importance, given of course, that each individual nation has cumulative access to all of the information necessary. The feed-back information system will be an important part of the exchange, insofar as it is likely that, if abstracts of evaluation findings of the usage of particular media are available, this in itself will generate a greater momentum towards the more efficient usage of such media. Dialogue about evaluation results, too, will tend to speed on the development of much needed theoretical work on the evaluation of the utilisation of new media in INSET.

This report has shown that, although there is a wide range of possible ways of implementing new media in INSET, the best results are to be found where the teachers themselves play an active role and where this is recognised by those responsible for the provision of INSET.